REMARKS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

Claims 1-8 are pending. Claims 1 and 6 are amended to further clarify the features contained therein. No new matter is introduced.

In the outstanding Office Action, Claims 1-4 and 6-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu ("AOTO: Adaptive Overlap Topology Optimization in Unstructured P2P Systems", December 4, 2003, hereafter "Liu") in view of Li ("Efficient Distribution Path Selection for Shared Restoration Connections", 2002, hereafter "Li") and Chatterjee ("A Weight Based Distributed Clustering Algorithm for Mobile ad hoc Networks", 2000, hereafter "Chatterjee"); and Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu, Li and Chatterjee in further view of Traversat (U.S. Patent Application Publication No. 2002/0147771, hereafter "Traversat").

Initially, Applicants gratefully acknowledge the courtesy of Examiners Nickerson and Caldwell in holding a personal interview with Applicants' representative on September 8, 2009. During the interview, the outstanding issues in this case were discussed, as summarized herein below and in the Interview Summary, which the Examiners have made of record. No agreement was reached pending further search and consideration by the Examiners.

In reply to the rejection of Claims 1-4 and 6-8 as being unpatentable over Liu, Li, and Chatterjee, Claim 1 is amended to recite, *inter alia*, a node device which newly joins a network formed by a first existing node and a second existing node, and also recites that the node device includes a connection establisher unit where:

> wherein when calculating the first total metric value, the total metric value calculator calculates *a first weighted metric value as a product of a metric value of the first virtual*

> *connection to the first existing node and a first weighting coefficient representing a number of adjacent nodes to the first existing node*, the total metric value calculator also calculates *a second weighted metric value as a product of a metric value of a route to the second existing node via the first virtual connection and the first existing node and a second weighting coefficient representing a number of adjacent nodes to the second existing node*, and the first total metric value is calculated as a sum of the first weighted metric value and the second weighted metric value, and
>
> when calculating the second total metric value, the total metric value calculator calculates *a third weighted metric value as a product of a metric value of the second virtual connection to the second existing node and the second weighting coefficient*, the total metric value calculator also calculates a *fourth weighted metric value as a product of a metric value of a route to the first existing node via the second virtual connection and the second existing node and the first weighting coefficient*, and the second total metric value is calculated as a sum of the third weighted metric value and the fourth weighted metric value. (Emphasis added.)

Turning to the primary reference, Liu describes an adaptive overlay topology optimization (AOTO) method used to optimize unstructured peer-to-peer networks.[1] Liu describes an overlay multicast tree in which each of the peers in the network probes its immediate logical neighbors to determine a cost of connecting to each of these logical neighbors.[2] Each peer builds a cost table and shares the table with its immediate logical neighbor, and the costs of connections contained in the cost tables are used to reorganize the network topology.[3] Liu also describes that the AOTO method may be evaluated with simulations on simulated network topologies generated using power law and/or small world models, which describe the node degree, characteristic path length and clustering coefficient.[4]

However, Liu does not describe that the node degree, path length or clustering coefficient are used weight coefficients to weight the costs of connection contained in the

[1] Liu at page 4187, the second full paragraph on the right hand side.
[2] Liu at page 4187, Section II(B).
[3] Liu at pages 4187-4188, Sections II(B) and II(C).
[4] Liu at page 4188, Section III.

cost tables of the nodes. In fact, Liu only mentions node degree, path length and clustering when describing topology generation by the simulation tool *before* the AOTO method is used to optimize the simulated topology. Thus, Liu does not describe calculating a first weighted metric value as a product of a metric value of the first virtual connection to the first existing node and *a first weight coefficient representing a number of adjacent nodes to the first existing node*. Further, as acknowledged in the outstanding Office Action, Liu fails to describe a product of the metric value and the first weighting coefficient recited in amended Claim 1.[5] To remedy this deficiency in Liu, however, the outstanding Office Action combines Liu with Li.

Li describes a method to minimize restoration delay after a failure in a TDM or optical network by sharing multiple restoration connections that are not susceptible to simultaneous failure and are separate from the service paths normally employed by the network.[6] Li describes that the algorithm uses weights to compute the restoration path by taking into account shared restoration bandwidth, and that the selected restoration path is the one having the minimum weight among all suitable paths.[7] Specifically, Li describes that an administrative weight (W[i]), which may include a hoc count and/or link mileage, is weighted by the amount of additional restoration bandwidth needed should the restoration path be routed through the link (i).[8]

However, Li does not describe weighting the administrative weight (W[i]) according to a number of adjacent nodes. Instead, Li merely describes that the administrative weight (W[i]) is weighted according to the bandwidth needed to restore the connection across link (i),[9] and merely describes bandwidth as a set of channels or a number of channels, but does

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5 See the outstanding Office Action at page 6.
6 Li at page 140, the first three paragraphs under Section A.
7 Li at page 142, the second paragraph under Subsection 3.
8 Li at page 142, number 4 under Subsection 3; also page 143, the first two paragraphs on the right hand side.
9 Id.

not describe how the set of channels are related to a number of adjacent nodes.[10] Conversely, amended Claim 1 recites a first weighting coefficient representing a number of adjacent nodes to the first existing node, and a second weighting coefficient representing a number of adjacent nodes to the second existing node. Therefore, Li fails to disclose the first and second weighting coefficient recited in amended Claim 1. The outstanding Office Action, however, asserts that Chatterjee describes the claimed weighting coefficients.[11]

Chatterjee describes a combined weight metric algorithm that takes into account several system parameters to generate node clusters in an ad hoc network.[12] Chatterjee describes that for each node, the algorithm computes a degree of difference (D_v), a sum of distances (P_v) with respect to the other nodes, a mobility (M_v), and the total time (T_v) that a node has been the clusterhead.[13] The combined weight is generated for each node by summing the above-identified parameters after being respectively multiplied by a weighting factor (c_1, c_2, c_3 and c_4).[14]

However, Chatterjee describes that each parameter (D_v, P_v, M_v and T_v) is weighted by a *fixed* weighting factor (c_1, c_2, c_3 and c_4) rather than a weighting facture representing a number of nodes connected to the clusterhead.[15] In fact, Chatterjee teaches away from using the number of nodes connected to a clusterhead as a weighting factor insofar as Chatterjee describes the number of nodes connected to a clusterhead as dynamic, but requires that coefficients (c_1, c_2, c_3 and c_4) be fixed.[16] Thus, Chatterjee does not cure the above-noted deficiencies in Liu and Li, and no combination of Liu, Li and Chatterjee describes every

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[10] Li at page 141, the paragraph under Subsection 2; also see page 143, the first full paragraph on the right hand side.
[11] See the outstanding Office Action at page 5.
[12] Chatterjee at page 514, the last full paragraph.
[13] Chatterjee at page 515, the steps listed under, "Clusterhead Election Procedure."
[14] Chatterjee at page 516, step 6.
[15] Chatterjee at page 516, the last paragraph bridging to page 517.
[16] Chatterjee at page 516, the last paragraph bridging to page 517.

feature recited in amended Claim 1. As such, amended Claim 1 is believed to be in condition for allowance together with any claim depending therefrom.

Moreover, amended Claim 6 recites features substantially similar to those recited in amended Claim 1, and is thus believed to be in condition for allowance, together with its corresponding dependent claims, for substantially the same reasons. Accordingly, it is respectfully requested that the rejection of Claims 1-4 and 6-8 under 35 U.S.C. § 103(a) be withdrawn.

As the rejection of Claim 5 relies upon the combination of Liu, Li and Chatterjee for describing the above-distinguished features, and the above-distinguished features are not disclosed or suggested by the combination of Liu, Li and Chatterjee, alone or in further combination with additional cited references, it is respectfully submitted that a *prima facie* case of obviousness with respect to Claim 5 has not been presented. Accordingly, it is respectfully requested that the rejection of Claim 5 under 35 U.S.C. § 103(a) be withdrawn.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1-8 is earnestly solicited.

Respectfully submitted,

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